

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-45. Canceled.

46. (New) A method of implantation comprising the step of implanting a sample of resorbable silicon into a living animal or human.

47. (New) A method according to claim 46, wherein the resorbable silicon comprises a region of porous silicon having a structure such that when immersed in a simulated body fluid solution the porous silicon dissolves over a period of time.

48. (New) A method of implantation according to claim 46, wherein the resorbable silicon forms part of a bioactive silicon structure.

49. (New) A method of implantation comprising the step of implanting a sample of bioactive silicon in a living animal or human.

50. (New) A method according to Claim 49, wherein when immersed in a simulated body fluid solution held at a physiological temperature the silicon induces the deposition of a mineral deposit thereon.

51. (New) A method according to Claim 50, wherein the mineral deposit is apatite.

52. (New) Method according to Claim 51, wherein the apatite is continuous over at least an area of $100 \mu\text{m}^2$.

53. (New) A method according to Claim 49, wherein the silicon is at least partially porous with a porosity greater than 4% and less than 70%.

54 (New) A method according to Claim 53, wherein the porous silicon is microporous.

55. (New) A method according to Claim 53, wherein the porous silicon is mesoporous.

56. (New) A method according to Claim 53, wherein the porous silicon is visibly luminescent.

57. (New) A method according to Claim 49 or Claim 53, wherein the silicon is impregnated with at least one of the following species: calcium, or sodium, or phosphorus.

58. (New) A method according to claim 49 wherein the silicon is polycrystalline silicon.

59. (New) A method of implantation comprising the step of implanting a bioactive silicon structure in a living animal or human.

60. (New) A method according to Claim 59, wherein the structure comprises a porous silicon region having a porosity greater than 4% and less than 70%.

61. (New) A method according to Claim 60, wherein the porous silicon is microporous.

62. (New) A method according to Claim 60, wherein the porous silicon is mesoporous.

63. (New) A method according to Claim 60, wherein the structure also includes macroporous silicon.

64. (New) A method according to Claim 59 or Claim 60, wherein the method further comprises the step of impregnating the silicon with at least one of calcium, sodium, or phosphorus.

65. (New) A method according to Claim 64 wherein the porous silicon is impregnated with calcium at a concentration greater than 10^{21} cm^{-3} .

66. (New) A method according to Claim 59, wherein the structure includes resorbable silicon material.

67. (New) A method according to Claim 59 wherein the structure comprises a region of polycrystalline silicon.

68. (New) A method of implantation comprising the step of implanting a sample of biocompatible silicon into a living animal or human.

69. (New) A method according to Claim 68, wherein when immersed in a simulated body fluid solution held at a physiological temperature the silicon induces the deposition of a mineral deposit thereon.

70. (New) A method of accelerating or retarding the rate of deposition of a mineral deposit on silicon in a physiological electrolyte wherein the method comprises the application of an electrical bias to the silicon.

71. (New) A method according to Claim 69, wherein the silicon is porous silicon.

72. (New) A method of implantation comprising the step of implanting a sample of a bioactive material into a living animal or human, wherein the bioactivity of the material is controllable by the application of an electrical bias to the material.

73. (New) A method of implantation comprising the step of implanting a sample of a bioactive electrically conductive material into a living animal or human.

74. (New) A method of performing a bioassay comprising the steps of: (a) supporting a cell line on a substrate, and (b) exposing the cell line to a pharmaceutical product, wherein the substrate comprises one or more of resorbable silicon, bioactive silicon, and biocompatible silicon.

75. (New) A method of performing a bioassay according to claim 74 wherein the substrate further comprises apatite.

76. (New) A method of performing a bioassay according to claim 74 or 75 wherein the method is performed *in vitro*.

77. (New) A method of forming a bond between living tissue and a material, comprising the steps of (a) forming the material at least partly from bioactive silicon, and (b) bringing the bioactive silicon into contact with the living tissue.

78. (New) A method of degrading a material and replacing it with living tissue, comprising the steps of (a) forming the material at least partly from resorbable silicon, and (b) bringing the resorbable silicon into contact with living tissue.

79. (New) A method of enhancing mineral deposition on an implantable bioassay device having an integrated circuit comprising, prior to implantation, forming a layer of bioactive silicon on at least a portion of the bioassay device.

80. (New) A method of improving adhesion of bone to a surgical implant comprising, prior to implantation, forming a layer of bioactive silicon on at least a portion of the surgical implant.

81. (New) A method according to one of claims 49 or 59 wherein the bioactive silicon comprises one or more of: bulk crystalline silicon, amorphous silicon, and polycrystalline silicon.

82. (New) A bioactive silicon structure comprising resorbable silicon material.

83. (New) A bioactive silicon structure according to claim 82 wherein the resorbable silicon material comprises mesoporous silicon, and is arranged such that, when the structure is immersed in a human or animal body, it acts as a source of soluble silicon

84. (New) An electronic device for drug delivery comprising bioactive silicon and a drug.

85. (New) An electronic device according to claim 84 for drug delivery characterized in that the device further comprises resorbable silicon.

86. (New) A method according to one of claims 46, 66 or 78 wherein the resorbable silicon comprises one or more of amorphous silicon, polycrystalline silicon, and crystalline silicon.